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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,741	03/08/2007	Klaus Fiedler	PHDE030399US	5598

38107 7590 04/01/2008

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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CLEVELAND, OH 44143

EXAMINER	
GREEN, YARA B	

ART UNIT	PAPER NUMBER
2884	

MAIL DATE	DELIVERY MODE
04/01/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/595,741	FIEDLER ET AL.	
	Examiner	Art Unit	
	YARA B. GREEN	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7 and 9-15* is/are rejected.

7)☒ Claim(s) *6 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/8/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to because of the following informalities: It seems that claim should read "....each scintillation element has a depth…" instead of "…each scintillation element as a depth.." Appropriate correction is required.

2. Claim 14 is objected to because of the following informalities: It seems that a word is missing after "includes a substantially…". Appropriate correction is required.

3. Claims 6 and 8 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative form only. See MPEP § 608.01(n). Accordingly, the claims 6 and 8 have not been further treated on the merits.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1, 2, 4, 7, 11,** and **13-15** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Thompson (US Patent No. 4,291,228; published September 22, 1981).

Re **claim 1**, Thompson discloses a scintillation layer for a PET-detector with a curved internal surface and/or a curved outer surface comprising a plurality of scintillation elements that are

joined together with minimal gaps and that are oriented towards the center of curvature of the scintillation layer (col. 5, lines 5-10).

Re **claim 2**, Thompson discloses the scintillation later according to claim 1, wherein it is cylindrically curved and that it comprises scintillation elements having the form of a truncated wedge (col. 4, lines 26-34).

Re **claim 4**, Thompson discloses the scintillation layer according to claim 1, wherein gaps between neighboring scintillation elements are filled with reflecting material (col. 4, lines 18-20, lines 32-36).

Re **claim 5**, Thompson discloses a PET-detector with a scintillation layer, the scintillation layer having a curved internal surface, a curved outer surface and comprising a plurality of scintillation elements that are joined together with minimal gaps that are oriented towards the center of curvature of the scintillation layer (col. 5, lines 5-10).

Re **claim 7**, Thompson discloses a method for production of a scintillation layer for a PET-detector comprising joining a plurality of scintillation elements with minimal gaps, the scintillation elements being shaped in such a way that the resulting scintillation layer is curved and orienting the scintillation elements towards the center of curvature of the scintillation layer (col. 5, lines 5-10).

Re **claim 11**, Thompson discloses an imaging detector comprising:

a plurality of scintillation elements that are joined together to form a substantially gapless scintillation layer with a substantially continuous curved detection surface (col. 5, lines 5-10); and

one or more photodetectors elements that sense light photons generated by the scintillation elements (col. 2, lines 56-60).

Re **claim 13**, Thompson discloses the imaging detector of claim 11, wherein each scintillation element has a depth and width that varies with the depth (col. 5, lines 5-10).

Re **claim 14**, Thompson discloses the imaging detector of claim 13, wherein the widths of each of the scintillation elements are substantially the same for any given scintillation element depth (col. 5, lines 5-10).

Re **claim 15**, Thompson discloses the imaging detector of claim 11, wherein the scintillation layer includes a substantially continuous curved outer surface (col. 2, lines 49-51; figure 4).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (US Patent No. 4,291,228; published September 22, 1981) in view of Pandelisev (US Patent No. 5,753,918; published May 19, 1998).

Thompson discloses shapes that may be used for the configuration of a scintillator layer in a PET-detector system, but does not disclose the shape to be a truncated pyramid. In a similar field of endeavour, Pandelisev teaches scintillator crystal shapes suitable for gamma detectors which easily include PET-detectors (col. 8, lines 13-16). Pandelisev further teaches wherein the scintillator has the form of a truncated pyramid (col. 6, lines 53-58). One of ordinary skill in the art would have been motivated to implement the form of Pandelisev in the scintillation layer of Thompson in order to provide a crystal that may direct the scintillated photons to the photodetector with minimal loss.

8. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (US Patent No. 4,291,228; published September 22, 1981) in view of Levin (US Patent No. 7,049,600; filed September 13, 2003).

Thompson teaches the limitations of claim 7, as mentioned previously. Thompson, however, is silent as to the manner in which the scintillator crystals are formed, thereby allowing for that which is well known in the art. In a similar field of endeavour, Levin teaches it is well known to cut scintillator crystals to be used in PET-detectors (col. 5, lines 23-26, 55-60). One of ordinary skill in the art would have been motivated to implement the method of Levin in that of Thompson in order to produce scintillation crystals suitable for PET-detectors in a manner that is well known in the art.

9. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (US Patent No. 4,291,228; published September 22, 1981) in view of Ilyukha et al. (US Patent No. 5,723,076; published March 3, 1998).

Thompson teaches the limitations of claim 7, as mentioned previously. Thompson, however, is silent as to the manner in which the scintillator crystals are formed, thereby allowing for that which is well known in the art. In a similar field of endeavour, Ilyukha et al. teach a method of producing scintillator crystals in which the they are formed by press-forming of ceramic scintillation materials (col. 6, lines 15-25; col. 4, lines 13-26; col. 3, lines 5-8). Ilyukha et al. further teach such a method allows for any geometry to be created and also reduces waste created by other means of scintillator crystal production (col. 2, lines 48-55). One of ordinary skill in the art would have been motivated to implement the method of Ilyukha et al. in that of Thompson in order to produce scintillator crystals in an efficient and less wasteful manner.

10. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (US Patent No. 4,291,228; published September 22, 1981) in view of Moyers (US PreGrant Pub. 2004/0217292; filed May 1, 2003).

Thompson discloses using a dense scintillator, bismuth germanate, due to its efficiency. In similar field of endeavour, Moyers teaches using LSO, one of the group of LSO, LYSO, LuAG, LaBr3, as a suitable scintillator for PET detectors. LSO, Moyers continues, is desired for such scanners because of their high sensitivity. One of ordinary skill in the art would have been motivated to use LSO as a scintillator material, as taught by Moyers, in the detector of Thompson, as it is well known for its high sensitivity in PET detectors.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shah (US PreGrant Pub. 2005/0104002) teaches numerous scintillators that are suitable for PET-detectors including BGO, LSO, and GSO.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YARA B. GREEN whose telephone number is (571)270-3035. The examiner can normally be reached on Monday - Thursday, 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Constantine Hannaher/
Primary Examiner, Art Unit 2884

Yara B. Green
/YBG/